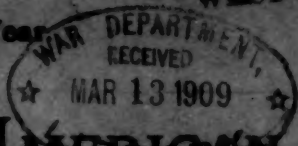


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AMERICAN JOURNAL OF

PHOTOGRAPHY

AN ILLUSTRATED MONTHLY
DEVOTED TO PHOTOGRAPHY IN ITS
WIDEST SENSE

Vol. XVII.

AUGUST, 1896.

No. 200

CONTENTS.

PAGE	PAGE
Echoes from Calaveras—The Convention of the P. A. of A.	229
The Joly Process of Color Photography (Illustrated). Julius P. Suckes.	213
The Historical Evolution of Photography Methods in Intaglio and Relief, T. Solas, F.C.S., F.L.S.	313
Photographs in True Tints.	350
Half-tone Etching on Copper, W. H. Nystop.	350
The Coming Total Solar Eclipse.	354
The Photoscope.	357
Photography in Natural Colors (Continued).	370
Facsimilization of Memory.	374
"Cycling and Photography."	377
THE EDITORIAL DROP-SHUTTER.—(a) Voice Pro- tection, 379; (b) Snap Shots at the Sun, 380; (c) Improvement in Lens Mounts, 380; (d) A New Photographic Paper, 380; (e) American Lens, 381; (f) Rapid Paper Making, 381; (g) Photographers' Association of Michigan, 381	
ROENTGEN RAY NOTES.—(a) Inexpensive X Ray Apparatus, 383; (b) Pseudo Roentgen Rays, 383; (c) Different Rays, 383; (d) X Rays and Recilli, 384; (e) X Ray Advertising, 384; (f) Deflection of the Rays, 385; (g) Mr. Edison's Sound Wave Theory Unintended.	383
IN THE TWILIGHT HOUR.	388

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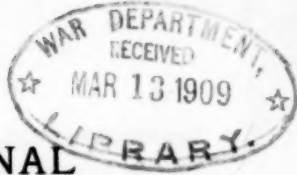
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INDEX TO ADVERTISEMENTS.

ALPHA ARISTOTYPE PAPER,	xxv.
AMATEUR PHOTOGRAPHERS' HANDBOOK,	xix.
ANTHONY, E. & H. T. & Co., Entrekin's Burnishers,	xxxii.
ANTHONY, E. & H. T. & Co., "Aristo" Collodion Paper,	4th page of cover.
BARGAIN LIST,	i and ii.
BAUSCH & LOMB OPTICAL CO., Lenses and Shutters,	xxiv.
BEACON PUBLISHING CO., THE,	xxxv.
BLITZ-PULVER FLASH-LIGHT,	xlii.
BLOOMINGTON OPTICAL CO., Cameras,	xix.
BUCHANAN, W. P., Luxo Powder,	xvii.
BUFFALO ARGENTIC PAPER CO.,	xxii.
CANADIAN PHOTOGRAPHIC JOURNAL, THE,	xxxii.
CARBUTT, JOHN, Photographic Plates,	xviii.
CLEMONS, JOHN R., Matt Surface Paper,	xi.
COLLINS, A. M., MANUFACTURING CO., Photographic Card Stock,	xiii.
COMPRESSED FIBRE CO., Fibre Trays and Fixing Boxes,	xxxviii.
CRAMER PLATES,	xxxvii.
CURRENT LITERATURE PUBLISHING CO.,	xvii.
DARLINGTON'S HANDBOOK,	vi.
DIETZ RUBY LAMP,	xxiv.
EIKONOGEN, RODINAL, AMIDOL (Developers),	v.
FLAMMANG CAMERA CO.,	x.
FRENCH, BENJ. & CO., Lenses,	viii.
GILBERT, E. A., Aristotype Paper,	xiii.
GENWERT, C., Photographic Supplies,	
GUNDLACH OPTICAL COMPANY,	xii.
GUNDLACH PHOTO-OPTICAL CO. Lenses,	xxviii.
HARE & SCOTT, "Tricks in our Trade"	xix.
HIGGINS, CHAS. M. & CO., Photo Mounter,	xix.
INTERCHANGEABLE VIEW ALBUMS,	xxvii.
KEMPER, A. C., "Kombi" Camera,	xxxviii.
LAVETTE'S PATENT ENVELOPE,	xxxviii.
MANHATTAN OPTICAL CO., Lenses,	xlv.
MUNN & CO., Scientific American,	xvii.
MURPHY, GEORGE, Photographic Supplies	xxxi.
NEW YORK DRY PLATE CO.,	xxxvii.
NOLAN, JOHN R., Patent Attorney,	xvii.
NORTON CLOUD-SHUTTER CO.,	xv.
OBSERVER, THE,	vii.
ORTHOSCOPE LENSES,	xxi.
PACKARD BROS., Scenic Productions,	xlv.
PECK, O. H., Flash Lamp,	xvii.
PERFECTION BLUE PRINT PAPER,	xxix.
PHILLIPS & JACOBS, Photographic Chemicals,	xvi.
PHOTOGRAM, THE,	xv.
PHOTOGRAPHIC BLUE BOOK,	xv.
RAMSPERGER, H. G. & CO., Photographic Specialties,	xxii.
RIEHL BROS. TESTING MACHINE CO.,	xxxi.
ROCHESTER OPTICAL CO., The "Premo" Camera,	xliii.
ROUGH, PLATZER & CALDWELL, Backgrounds,	xliii.
SCHERING, E., Pyrogallie Acid Developer,	xxxiii.
SCOVILL & ADAMS CO., Lenses,	xx.
SEAVEY, L. W., Backgrounds,	xxxiii.
SPRAGUE SCHOOL OF LAW,	vi.
SMITH, JAS. H. & CO., "Celerite" Paper,	xvii.
THORNTON-PICKARD CO., Shutters,	vi.
UNITED STATES ARISTOTYPE CO.,	xxxix.
WAIR & BARNES, Backgrounds,	xxv.
WALFOLLE DYE AND CHEMICAL CO., Photographic Chemicals,	xvi.
WILLIAMS, BROWN & EARLE, Trimming Board,	vii.
WILSON, EDWARD L., Photographic Literature,	xxxix.



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THOS. H. McCOLLIN, Managing Editor.

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ECHOES FROM CELERON.

THE CONVENTION OF THE P. A. OF A.

THE PROCEEDINGS OF THE GREAT GATHERING IN DETAIL.

THE convention at Celeron, the largest and most successful one in the history of the association, is now a thing of the past. If there is a happier set of men in the country than R. P. Bellsmith, George Steckel, George T. Bassett, J. Will Klemmer and C. M. Hayes, who composed the Executive Committee of the Photographers' Association of America, we should like to hear of them. They were probably the busiest men in the State during the convention week, and may now enjoy a rest upon their well-earned laurels.

A wonderful transformation had taken place at the Celeron rink, and when the convention was called to order it appeared resplendent with the colors of all nations, and with palms, plants, evergreens and flowers.

The first session of the association was held on Monday evening, and was an informal one.

The auditorium was brilliantly lighted; the pictures in the art display were nearly all in readiness to be seen; the exhibits of manufacturers' and dealers' supplies were everywhere in evidence,

and the members of the association spent the evening, as the official program puts it, in "everybody getting acquainted."

Outside of the ring the Celeron Gold Band gave a delightful concert and the Celeron Amusement Company tendered a complimentary specialty entertainment to the association at the Venetian theatre, by the Metropolitan Specialty Company. This was a delightful hour's entertainment, the various specialties being of a good order and giving delight to the many who saw them. The entertainment opened with the Regina brothers, aerial specialists, who gave a marvelous exhibition on rings, bars and trapeze. This was followed by Fleurette, who proved herself one of the most graceful skirt dancers of the day and won many admirers. Tonroy, the trick and fancy bicycle rider, was very clever in his specialty and apparently could ride anything from a wagon wheel to a bucking broncho. Logrenia gave some astonishing tricks in necromancy and the entertainment closed with the bright German sketch team, Jeanette, Lewis and William Miliken in German songs, sketches and dances.

The evening's exercises were as enjoyable as they were informal, and placed the entire party in the best of humor for the more serious work of the business sessions of the convention.

TUESDAY MORNING, JUNE 23D.

At 11 o'clock President Bellsmith called the convention to order. The thousand chairs which had been provided for the use of the members were filled when the convention was called to order and many were in the hall at the rear, but within easy sound of the president's voice. In lieu of a better gavel the president handled a carpenter's hammer to call for order, but the convention was not the kind of one to require such a vigorous instrument in the hands of the presiding officer.

On the platform, in addition to the officers of the association and representatives were Hon. Porter Sheldon, of Jamestown, Edward L. Wilson, Mr. Cramer, John Carbutt, George Hastings, Jex Bardwell and Mr. Bogardus.

The president introduced the Hon. Porter Sheldon, who gave the formal address of welcome to the association as follows:

Mr. President, Ladies and Gentlemen of the Photographers' Association of America :

Old Chautauqua bids you a cordial welcome to her heights. Her great heart glows with warmth at your approach. She will inspire you all, never doubt it, with a generous rivalry to make the most and the best of this week's outing.

In the cool, calm mornings of her perfect June, when with even pulse and clear, searching eyes you address yourselves to the duties of your great association, seeking to realize and enforce that golden maxim, "Help ye one another," that renders so delightful the contact of kindred spirits striving for great excellence, her spirit will abide with you then.

When, released from the duties of the day, whether you devote the bright afternoons to the diversions of recreation or repose, old Chautauqua will be there to help.

To the more active her attentions may be a little warm, but Mr. President, I assure you that although these warm attentions may seem somewhat oppressive at the time, yet, like the hot summer evenings which you have spent in old Cincinnati with your best girl, they will be sweet to remember.

Then, ah! her delicious nights, when she woos you beneath her silver moon, upon her rippling waters, and fans you with her coolest airs, she will be irresistible to you then.

But, Mr. President, I have a word of warning which I must speak to some of my youngest, most inexperienced friends here, like—yes, I will not be personal, like Charlie Hetherington, for instance.

Beware! Beware! Beware! An evil spirit, disguised in a most seductive form, haunts these beautiful shores by the pale light of the moon! Beware, beware, beware, for—

The sweet sounds of the early morning,
The bright sights of the sunny days,
Are only sweet when we fondly listen,
Are only bright when we fondly gaze.

Now how can you fondly listen to the sweet sounds of early morning or fondly gaze in the bright light if your little heads are swelled to bursting?

Mr. President, and ladies and gentlemen, old Chautauqua gladly welcomes you, and wishes you the greatest possible profit and pleasure.

Mr. Sheldon's address was punctuated with applause and laughter, and the president expressed the feelings of the association when he answered it, speaking as follows :

Mr. Sheldon :—On behalf of the Photographers' Association of America I desire to honestly and earnestly thank you for your cheerful and warm words of welcome. From what we have already learned of you Chautauquans and of this place we are sure that the welcome is more than a formal

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speaking of the words; that it is no mere lip welcome; that the sentiment springs from the heart. And I assure you that we are as happy to be with you, as an association, as you are to see us here. Again, Mr. Sheldon, I thank you.

The president announced that the roll was too long to be called and unless it was the desire of the association it would be omitted from the formal opening exercises. The association indorsed the president's views on that point. Mr. Bellsmith then gave his annual address to the association as follows:

Ladies and Gentlemen of the Convention:

In addressing you briefly this morning, I will not attempt any discussion of technical matters or theories in reference to photography, but will confine my remarks to suggestions for the advancement and improvement of our association and members of the craft generally.

You are congratulated upon the increased interest and greater usefulness of our organization. There is nothing like union and association to improve and advance us. The social features are of great advantage, but more than all, and above all, is the good that comes from conference among ourselves.

You rub off the rough edges, you forget the sharp competitions, old sores are healed, new and lasting friendships are formed, and you learn only of what good you can accomplish.

While enjoying to the fullest extent the social features do not neglect the great and lasting good to be derived from the careful, intelligent and thoughtful study of the photographic work entered for the prize competition.

I congratulate you upon the higher standing, both socially, and as business men, which as a body photographers have attained; still there is room for improvement. In this connection there is one practice that is still maintained in the great majority of studios. I refer to the rather degrading custom of doing business on Sunday. We have all been more or less guilty and I think this has interfered more than any one thing with our taking, as a profession, a higher standing in the community. I would suggest that this matter be given to a committee to report on some feasible way of promoting the proper observance of the Sabbath.

I feel it my duty to call to your attention a matter which is yearly becoming more embarrassing to the officers of this association, and on which I deem some action should be taken, to insure success and equity of future conventions.

It must be apparent to you that convention halls, medals and prize trophies, entertainment and educational attractions and provisions, with the vast amount of details, correspondence and literature attendant, cost a

considerable sum of money annually that membership fees of photographers will not begin to cover.

This expense is provided for by selling space to manufacturers and dealers for exhibition and educational privileges and from subscriptions of dealers and manufacturers whose business is dependent upon their trade with photographers.

It would seem that manufacturers and dealers basing their business upon their trade with photographers and gaining opportunity of meeting their trade at conventions would be willing to do their pro rata share in defraying the expense of these meetings and it would also seem a matter of equity that they should do so.

Unfortunately these are not the facts, and I am pained to state that the maintenance of our conventions has been dependent upon the generosity of a few manufacturers and dealers, who have been taxed way beyond an equitable basis, while the majority have been admitted to the full enjoyment of the trade advantages of the convention without contributing a cent to the expense, save the admission fee at the door. This to me is not only manifestly unfair, but cannot go on with any safety to our organization, and I regard it that the time is not far distant when our generous and liberal friends will finally tire of this unjust tax upon them, which is not begrudged to the advantage of the photographers but to the equal advantage of their competitors who feast at their expense. I therefore place this matter before you in its naked truth for your consideration, and would suggest that some legislation be enacted to place this matter on an equitable basis, whereby a few of the manufacturers and dealers will not be called upon to defray the per capita tax of the many who enjoy equal privileges with them, and where, if a dealer or manufacturer be permitted on the floor of our convention halls, he will be obliged to defray his fair share of the privileges he enjoys.

We have here with us to-day concerns who have spent hundreds of dollars for the privileges we are enjoying, while others without the expenditure of a cent aside from their admission fee take equal prominence with them from a social and trade point of view. It is neither just nor equitable and, like all things based upon similar standards, must sooner or later fail.

In somewhat lively contrast to this, is the action of the local entertainment committee of the Detroit convention of last year, who, having a surplus of \$242, most generously donated that amount to this association. I consider this very handsome and it should not be allowed to pass unnoticed.

The matter of changing our constitution and by-laws has been agitated to some considerable extent since our last meeting, and that the time of the convention be not taken up by too lengthy discussion bearing upon this subject to the exclusion of the regular order of business, I would suggest that a committee be appointed to take this matter under consideration.

One of the most fruitful causes for dissension and criticism in the past

has been in the matter of the appointment and personnel of the judges of the exhibits competing for the prizes offered by this association. The system inaugurated by the executive committee of territorial divisions has offered a solution of our former difficulty whereby the very best talent in the profession is available. Under our present plan an exhibitor is eligible for the position of judge in any division, excepting the one he is himself competing in.

In conclusion permit me to commend the wisdom of your choice in selecting fair Chautauqua for the place of holding our convention, aside from the convenient and magnificent auditorium and art hall. The opportunity afforded for a delightful vacation is unsurpassed and should have our serious consideration as a place for future conventions. The manufacturers and dealers in photographic materials have most generously provided for your entertainment and recreation, no efforts having been spared to make this the most pleasant, profitable and successful convention in the history of our organization.

The address was very well received by the convention and generously applauded.

Mr. Bassett moved that the president appoint a committee of five to consider the matter of revising the constitution of the association.

The motion was carried and the following committee named: George T. Bassett, Indianapolis; Perie McDonald, Albany; Abram Bogardus, New York; George G. Rockwood, New York; George Steckel, Los Angeles.

Jex Bardwell, of Detroit, to whom the photographers of the United States are very largely indebted, was on the platform. He was called upon for an address and spoke briefly. He discussed especially the details of stereoscopic photography and of the beauty and pleasure which could be derived from this field of art. "A soft negative," he said, "should be taken for this line of work, and in so doing the artist can bring out more beauties than can be secured in any other branch of photography." He said he would like to see among the list of prizes new classes embracing the art of retouching and printing. They were special arts of themselves and should be encouraged.

Edward L. Wilson of New York was called out. He said he wanted to say a word on behalf of Jex Bardwell. "Jex Bardwell," said he, "was the principal witness in a case many years ago which resulted, by reason of his testimony alone, in a decision saving to the photographers of the United States millions of dollars. It was upon the matter of a patent on the use of bromides in photography. His evidence gave the decision to the photographers. A few days ago he and his wife celebrated their golden wedding.

They have no home, and this association should take the matter in hand and provide them one as a part of their golden wedding celebration." The suggestion was loudly applauded.

Abram Bogardus, of New York, was called for. He is an old-timer in photography. "It has been claimed," said he, "that photography is not an art, that it is merely machine work. This is false and I can prove it by anyone who has brains enough to recognize art if he will go with me through the magnificent display of photographs in the annex to this hall. There is art in photography, and I call upon everyone within the sound of my voice to prove it by his work in the future."

Charles Hetherington spoke briefly for the school of photography which he is conducting at Celeron during the convention. "I am glad," said he, "to see so many here and to see you all so enthusiastic in your work and the work of the convention. We are here for the purpose of exchanging ideas, and with this thought in view we have established a school of photography on these grounds, to last as long as this convention lasts. I want to see you all there. We will form classes embracing every branch of photography. We do not claim to know all about it. It is not a school with one professor and many or few scholars, but it is to be a school where all should be teachers and all students. Then it cannot fail of success, and in itself will be well worth the cost and time taken to attend this convention."

Mr. McDonald, of Albany, spoke of the great labor that had been necessary in preparing for this convention, and of the work and expense of the American Aristotype company. He felt that this company and especially Porter Sheldon and Charles Abbot and Charles Hetherington should be given three cheers, and they were given with a will by the large assemblage, after which the convention adjourned until the afternoon.

WEDNESDAY, JUNE 24TH.

The convention was called to order promptly at 11 o'clock by President Bellsmith, and there was a large attendance notwithstanding the storm.

A. L. Bowersox, of Dayton, O., reported for the Committee on Progress in Photography. He referred significantly in opening to the vast room for improvement yet possible in artistic photographic effects. Apparatus and appurtenances have seemingly reached the highest possible stage of perfection and are doing little more now than in keeping up the high standard of their outputs. "The most needful thing," said the speaker, "is to realize our art poverty and strive for higher attainments."

Edward L. Wilson, of New York, was introduced and made a plea for more thought in the practice of the photographer's art. A splendid effect is often ruined by a blot of light or an inharmonious setting. It is high



time that the photographers should rouse from their lethargy and strive for the high place awaiting them. It will pay to think seriously upon what we do. Photographers do not give the same thought to their work under the skylight as in the dark room, thus causing results not worthy to be classed with good work. Thought is a human motor. We must educate and train our minds according to the laws of thought. Proper thinking is the germ of the whole matter. Be intense and continuous in thought. Devote an hour each day to thinking on your work and gradually increase the time. A marked change for the better will take place in your habits of thinking and work. You will grow in usefulness as you mature, adding fame to your work and money to your purse.

President Bellsmith spoke in behalf of the project of raising a fund to provide a home for Jex Bardwell, and was followed by Edward L. Wilson. On motion of A. L. Bowersox, of Dayton, O., G. Cramer of St. Louis, W. H. Allen of Detroit, George Steckel of Los Angeles, J. Edward Rosch of St. Louis, and Edward L. Wilson of New York, were appointed a committee to make the necessary arrangements for providing a home for Mr. and Mrs. Bardwell at an expense of about \$2,500, to be raised by subscriptions.

J. Edward Rosch, of St. Louis, spoke upon the importance of feeling in art. That man is the greatest artist who follows nature. Art is born in the striving for something better. No master lives who has not at some time broken the laws of perspective and composition. Photography should be placed among academical institutions.

George G. Rockwood, of New York, was called from the audience and made a brief address on the enlarging of photos.

H. R. Hemperly, of Philadelphia, in speaking on Generalities, noted the improvement made in the art side of the photographer's calling. He also made strong hits at some of the fads and foibles of the calling, and made a plea for the establishment of an academy of photography.

THURSDAY, 25TH.

The convention was called to order this morning considerably behind the schedule time, and it was nearly 1.30 p.m. when the session was concluded. A large audience greeted the speakers at the opening, but by the time the session was declared adjourned there was hardly a corporal's guard in the seats set apart for the auditors.

The persistent transaction of outside business during the sittings of the convention have been the source of much unevenness and dissatisfaction in conducting the order of business. Various expedients have been resorted to from time to time to obtain

quiet, and stretches of it marked enough to be complimentary to the speaker and convention have been about as few and far between as the oases of a desert.

The annual report of the treasurer, C. M. Hayes, of Detroit, was read by Secretary J. Will Kellmer, of Hazelton, showing a balance in the treasury of over \$900.

President Bellsmith appointed the following as a nominating committee: Frank Snyder, W. J. Root, J. Watson, E. H. Newell and Joseph Knaffle.

Ben Larrimer, president of the Indiana state association, introduced the speaking session of the morning. In introducing his address he cautioned those present against the danger of becoming a convention photographer—a photographer who puts forth his best efforts for the convention exhibitions, giving his poorest work to the customers at home. It is hard to give instruction in the science of photography that will be applicable to all cases. What one photographer will swear by another will swear at. A delicious vein of humor pervaded the talk.

The art of photography was discussed by John S. Schneider, of Columbus O. The photographer of to-day is not satisfied merely with mechanical effects, but is reaching out after the beautiful. When the operator has both he has become an artist. Some claim that photography is merely the result of optical and chemical laws, no more. He must see that everything conforms to the accessories and details may conform to the laws of composition. No detail can be made to any extent after the negative is exposed. Every detail of light, shade and lines must be pre-arranged. The camera is a most truthful portrayer and it often sees a most stubborn individual. The photographic operator of all artists is the most dependent. The greater his difficulty the greater therefore is his triumph in success. One of the most important things is to make the subject feel in sympathy with the aims of the operator. Abandon, life and feeling are most important considerations in the general result.

C. O. Cowles, of Cumberland, Maryland, addressed the convention in regard to improvements in the convention machinery. In addition to the official secretary the speaker advised that a vice secretary be appointed from each state for the purpose of rubbing coat sleeves with the photographers of the smaller towns and cities, for the purpose of arousing a broader interest in the work of the association. He also recommended the reclassification

of exhibitors' classes so as to place the smaller cities and towns in separate classes, to their marked advantage.

The comprehensive subject, Children, was touched upon from the photographer's standpoint. It is the strong, masterful, genial operator who has the best success. This is largely an accident of birth, but there is no doubt that these qualities can be cultivated to a marked extent. Keep cool. Philosophically view your troubles and if you can't surmount them go around. There is a difference between a portrait and a picture. One is merely a record of facts, while the other is imbued with life and feeling. Good nature and patience, indispensable in the treatment of the adult, is equally so with the children. Love should invite, not force rule.

"It is essential that you make a friend of every customer that comes into your gallery," said J. Edward Rosch, of St. Louis. You should make an effort to maintain such a relation with every customer. Greet every customer as if he or she were a friend. This will pay a greater revenue than most any other feature of your work. You can't get a customer to smile unless you help them. It is one of the greatest things in the business to be able to get good results with your negative. This with good nature will bring financial success.

In the interest of a foreign exhibition of American photographs, Mr. Rosch invited photographers to deposit with him at least three of their best pictures, to be sent to the convention of the German Photographic society. President Bellsmith on motion appointed the following as a committee to make the necessary arrangements: J. Edward Rosch of St. Louis, Frank R. Snyder of Oxford, O., and E. B. Core of Cincinnati.

F. Dundas Todd, of Chicago, of the *Photo-Beacon* considered the Progress of Photography. He considered the average photographer in the light of business. To be successful in business a man must supply what is wanted. The prices obtained for photographs to-day is much smaller than in years past. The wide-awake photographer is always on the outlook for novelties. A good business man buys as cheaply as he can and sells for the most favorable figure. He will not buy the cheapest because it is cheap. Cheap help, paper and chemicals are dear at any price. A cheap man will often cost a photographer in a day as much as a competent man will cost in a week. Pure chemicals are of the greatest importance. Can any man tell the cost to produce a dozen cabinets?

Photographers as business men have not improved much. Never expect to take out of a plate more than you put into it. To get uniform results a man must work as far as possible under uniform conditions. Every photographer should have a system and live up to it. Too many spend too much time monkeying with this plate and that paper.

FRIDAY, JUNE 26TH.

The morning session was called to order by President Bellsmith at 11 o'clock. The first order of business was the report of committees.

Mr. Bassett, chairman of the committee to revise by-laws, reported that his committee had gone over the constitution and had decided that owing to changing conditions in the affairs of the association it would be unwise to make any changes this year, but probably some radical changes would be necessary by next year. He asked that the committee be discharged and the request was granted.

President Bellsmith read the report of committee on nomination of officers as follows:

President—C. M. Hayes, of Michigan.

First vice-president—J. Will Kellmer, of Pennsylvania.

Second vice-president—W. G. Thuss, of Tennessee.

Secretary—A. L. Bowersox, of Ohio.

Treasurer—George Varney, of Illinois.

The announcement of the name of each candidate was received with three cheers by the friends of the honored member.

After the report of the committee was presented George Steckel, of California, was also placed in nomination for president. A ballot was ordered by the president between Mr. Hayes and Mr. Steckel with the following result: Hayes 216, Steckel 60, many scattering votes.

Mr. MacDonald placed George Bassett in nomination for first vice-president in opposition to Mr. Kellmer. Enthusiastic speeches were made in favor of both these candidates and the election was attended with considerable excitement, resulting as follows: Bassett 49, Kellmer 181.

The announcement of the result was greeted with cheers, while the Pennsylvania delegation, which has been in great evidence throughout the convention, gave the delegation yell with great vigor as follows:

Chau-tau-qua! Penn-sylvan-yaw!! Hiss, Boom, Rah!!!

M. R. Hemperly was placed in nomination for second vice-

president in opposition to Mr. Thuss. The ballot resulted as follows: Thuss, 75; Hemperly, 30.

Mr. Bowersox was elected secretary and Mr. Varney treasurer without opposition.

Mr. Steckel moved that a full detailed report of the convention be prepared and published and sent to each member of the association.

On motion the secretary was directed to mail to each exhibitor the average markings of the judges on his exhibit.

J. Weil, of Chicago, read a valuable paper on non-studio photography, advocating the taking of pictures at the home of the patrons rather than in the studio.

At 1 o'clock the session adjourned to reconvene in the afternoon at 3 o'clock to choose a place of meeting for next year and to listen to the reports of the judges on the competitive exhibits.

AFTERNOON SESSION.

The session of the convention which probably called for the fullest attendance of members and created the greatest interest was that at which the awards of prizes were announced. This was Friday afternoon and the decision of the judges in the various high grade exhibits was received with tremendous applause and cheering. It will be specially gratifying to the people of Jamestown and western New York to learn that the exhibit of A. N. Camp of this city was awarded the second prize in the highest class in the eastern division—a division of the exhibition which contained photos from the finest photographic artists in the greater cities of the eastern states. The full list of awards is given below, with a class list showing what the exhibit in each class represented, as follows:

The grand genre prize was awarded to the Baker Art Gallery of Columbus, Ohio, and the division prizes were disposed of as follows:

EASTERN DIVISION.

Genre, E. C. Dana, New York.

Class A—1, Pirie McDonald, Albany; 2, A. N. Camp, Jamestown; 3, Gilbert & Bacon, Philadelphia; 4, Henry H. Pierce, Providence.

Class B—1, Hemperly, Philadelphia; 2, J. G. Nussbaumer, Buffalo; 3, J. C. Walker Woodstock, Canada; 3, Carl Horner, Boston.

Class C—One entry, Hale.

Class E—1, Wm. C. South, Philadelphia, 54 points; 2, W. H. Rau, 51; 3 and 4, Pach Bros., New York, Whitney & Son, each 49.

Class D—1, Schernee, Worcester, Mass.; bronze medals to Newman, New York; Musser, Harrisburg; F. W. Stiles, Westerly, R. I.; Van Tassel; D. E. Rowel, Lancaster; Goldman, Reading; Zuver, Pittsburg; Roshon, Harrisburg; J. B. Schriver, Emporium, Pa.; M. R. F. McCarthy, Binghamton; Grey, Watertown; Carl K. Frey, Utica; E. E. Seavey, New Castle, Pa.; W. E. Talbott, Schenectady; McFarland & Speck, Elmira; Griffin Studios, Scranton; Griffins Art Gallery, Wilkesbarre; Rosevear, Toronto.

Class F—1, Wm. Rosch, White Plains, N. Y.; 2, Geo. E. Tingley, Mystic, Conn.; 3, Wilfred A. French, Boston.

Class H—1, Frank S. Olds, Newark; 2, Jno. J. Betz, Jr., Baltimore; 3, Jackson, Williamsport.

Class I—Pirie McDonald, Albany.

MIDDLE DIVISION.

Genre—Baker art gallery, Columbus, Ohio.

Class A—1, Morrison, Chicago; 2, Root, Chicago; 3, Baker, Columbus; 4, Decker studio, Cleveland.

Class B—1, Arthur & Philbrick, Detroit; 2, G. B. Sperry, Toledo; 3, Dozer & McLain, Bucyrus, Ohio; 4, W. A. Pryor, La Crosse, Wis.

Class C—1, Van Loo & Trost, Toledo; 2, Dozer & McLain, Bucyrus; 3, Leo D. Weil, Chicago.

Class E—One entry, Will Armstrong, Chicago.

Class F—Mayo & Weed, Chicago, and A. G. McMichael, Detroit, each 57; 3, Allen & Fanjoy, Sault St. Marie.

Class G—1, Decker, Cleveland; 2, George Smith, Cincinnati; 3, H. S. Klein, Milwaukee.

Class D—Silver medal, C. R. Reeves, Anderson, Ind.; bronze medals, C. S. Bateman, Oberlin; Webster, Des Moines; Koehne & Bretzman, Chicago; White & Co., Port Huron; N. H. Hughes, Joliet; Frank D. Medlar, Spencer, Iowa; Mayo & Weed, Chicago; D. Gilbert, Frankfort, Ind.; Nicholson & Son, Crawfordsville, Ind.; Spellman, Springfield, O.; J. H. Henrichson, Cleveland; Ives; A. G. McMichael, Detroit; Watson, Detroit; Godfrey, Chicago; George Holoway, Terre Haute; De Vos, Wapau, Ind.; Larrimer Bros., Marion, Ind.; Harrison, Chicago; Wilhite & Nicely, Bloomington.

Class A—1, A. G. McMichael, Detroit; L. C. Overpeck, Hamilton, Ohio, and F. D. Foss & Co., Chicago, each 51.

WESTERN DIVISION.

Genre—Ed. Rosch, St. Louis.

Class A—1, J. C. Strauss, St. Louis; 2, Ed. Rosch, St. Louis; 3, J. A. Brush, Minneapolis; 4, W. T. Dole, Kansas City.

Class B—1, H. S. Bellsmith, Denver; 2, Webster, Oakland, Cal.; 3, J. V. Dads, Sunflower, Kan.

Class C—1, Aune, Portland, Ore; 2, Curtis & Gupthill, Seattle.

Class D—1, Knowlton & Co., Lincoln, Neb.

Class E—No entries.

Class F—No entries.

Class G—1, Aune, Portland, Oregon; 2, Webster, Oakland, Cal.

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Class F—1, Wm. Rosch, White Plains, N. Y.; 2, Geo. E. Tingley, Mystic, Conn.; 3, Wilfred A. French, Boston.

Class H—1, Frank S. Olds, Newark; 2, Jno. J. Betz, Jr., Baltimore; 3, Jackson, Williamsport.

Class I—Pirie McDonald, Albany.

MIDDLE DIVISION.

Genre—Baker art gallery, Columbus, Ohio.

Class A—1, Morrison, Chicago; 2, Root, Chicago; 3, Baker, Columbus; 4, Decker studio, Cleveland.

Class B—1, Arthur & Philbrick, Detroit; 2, G. B. Sperry, Toledo; 3, Dozer & McLain, Bucyrus, Ohio; 4, W. A. Pryor, La Crosse, Wis.

Class C—1, Van Loo & Trost, Toledo; 2, Dozer & McLain, Bucyrus; 3, Leo D. Weil, Chicago.

Class E—One entry, Will Armstrong, Chicago.

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Class G—1, Decker, Cleveland; 2, George Smith, Cincinnati; 3, H. S. Klein, Milwaukee.

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Class A—1, A. G. McMichael, Detroit; L. C. Overpeck, Hamilton, Ohio, and F. D. Foss & Co., Chicago, each 51.

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Class C—1, Aune, Portland, Ore.; 2, Curtis & Gupthill, Seattle.

Class D—1, Knowlton & Co., Lincoln, Neb.

Class E—No entries.

Class F—No entries.

Class G—1, Aune, Portland, Oregon; 2, Webster, Oakland, Cal.

SOUTHERN DIVISION.

Genre—Moses & Son, New Orleans.

Class A—1, McCrary & Son, Knoxville; 2, Knaffle Bros., Knoxville; 3, Moses & Son, New Orleans; 4, H. C. Hall, Augusta, Ga.

Class A—1, F. M. Somers, Memphis; 2, W. C. and H. I. Thuss, Nashville; 3, C. W. Motes, Atlanta; 4, P. P. Havens, Jacksonville, Fla.

Class C—One entry, Hoffman, Knoxville.

Class E—1, Knaffle Bros., Knoxville; 2, O. P. Havens, Jacksonville, Fla.; 3, McCrary & Branson, Knoxville.

Class F—1, Havens, Jacksonville; 2, M. M. Mudge, Chattanooga.

Class H—McCrary & Branson, Knoxville.

Class D—Silver medal, J. Paul Brown; bronze medals, Giers art gallery, Nashville; M. E. Schmeddling, Chattanooga; Mrs. L. Condon, Atlanta; A. G. Roberts, Henderson, Ky.; A. L. Blanks, Vicksburg; Homier & Clark, Richmond.

Class I—Homier & Clark.

At 5 o'clock the convention adjourned until 1897 at a date to be named by the executive committee, and the members gave "three times three rousing cheers for the best convention ever held by the Photographers' Association of America."

The Evidence of the Camera.—The character of the war in Cuba is being shown by agencies which render useless Spanish denials of its atrocities. The camera confutes them. It is no longer necessary to rely on reports, official or unofficial. The accurate and impartial sun has become the chief reporter on the field, and when his evidence is once on record it is indisputable. What volume of war history could tell as much as the New York *World's* photograph, printed in the issue of June 24th, showing a rank of Cuban dead, lying as they fell in orderly line, with hands and feet tied? Guerillas do not bind corpses! No Spanish denial counts at all against this evidence that the old Spanish habit of fusillading unarmed prisoners has not been abandoned. Such savage methods must excite the horrors of all civilized people. No European country except Spain is capable of the barbarities now being committed by Gen. Weyler's guerillas. In civilized war prisoners are not murdered in cold blood, nor do civilized soldiers fire on the unarmed and defenseless. The Spanish Cabinet declares that the Cuban patriots are brigands and bandits. But what worse form of brigandage could there be than that of Spanish troops whose march is marked by the corpses of bound prisoners?

THE JOLY PROCESS OF COLOR PHOTOGRAPHY.

(See Frontispiece.)

BY JULIUS F. SACHSE.

(Read before the American Philosophical Society, May 15, 1896.)

I have the honor to present to your notice this evening, by courtesy of Mr. Richard Barkley, of New York, a series of specimens illustrating the so-called "Joly" process of color photography.

They are the same as were lately shown before the Royal Society of England, and excited considerable attention.

This process, although it depends upon the three primary color sensations, differs materially from all others thus far brought to the notice of the public, because but a single photographic manipulation is required, and no apparatus is needed other than such as is used in ordinary every-day photography.

This process consists in making a negative through a closely-lined screen, ruled in three colors, viz., orange, yellow-green and blue-violet. The screens used in the specimens here shown were made with an ordinary ruling pen, such as is used by draughtsmen, and the lines number about two hundred to the inch. A finer ruling in the future will make the lines which we now see in the specimens before us less prominent.

It will be noticed that Prof. Joly, in his "taking" screen, which is here before you, has substituted, for the usually accepted primary color sensations, red, green, blue, the colors orange, yellow-green and blue-violet. Experience has taught him that not only were the former colors unsuitable for the purpose, but that to reproduce the effect of natural colors, a somewhat different screen must be used over the resultant positive image. For this purpose Prof. Joly rules a screen in pure red, green and blue-violet. This he calls his viewing screen.

[For the red-selecting lines of the "taking" screen, Prof. Joly uses a spectrum color, such as that to be found at one-sixth of the distance from the line D to the line C; for the green-selecting lines he uses a color corresponding to that of the spectrum at

about one-third of the distance from the E line to the D line ; and for the blue-violet-selecting lines he uses a color corresponding to the spectrum color near the F line, but toward the G line. On comparison of the "taking" screen with the spectrum, these colors can be called a red-orange, yellow-green, and a violet-blue. For the colors of the "viewing" screen he uses a pure red not far from the C line ; a green near the E line ; and for the blue-violet lines he takes a spectrum color between G and H, the object being in the "viewing" screen to transmit fundamental color sensations only, and to let the eye do its own mixing ; the eye is assisted by the depth of light and shade in the linear areas of the positive ; for instance, if the full amount of light of two adjacent red and green lines be transmitted, the eye sees a yellow ; if now some of the green be obstructed or shut out by the positive over it, then the eye will see an orange ; and if, on the other hand, some red be shut out by the positive, then the eye sees a yellow-green, and it is easy to see that one can run all the colors from pure red to pure green by the varying amounts of the red or green lines shut out by the positive.]

The first specimen we have here is a negative of a china plate and jug, photographed through the "taking" screen.

The next one is a glass positive printed in contact from the above negative. It will be noticed that neither of these specimens differ, from ordinary photographic results except that lines due to the use of the screen are somewhat prominent.

The third specimen is a positive similar to the one just shown, placed in register with a "viewing" screen ; and by holding it up to the light, and viewing it through the ruled grating, we see the china plate and jug in the bright colors of the original objects.

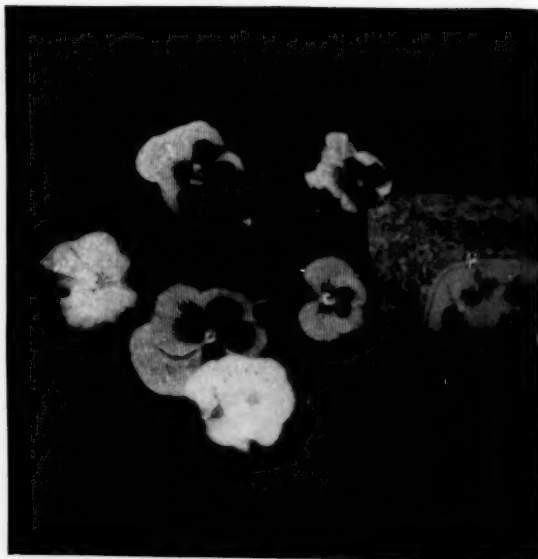
The next subject is a male portrait from life ; this illustrates the possibility of the process in its application to professional portraiture.

We now have a portrait of an "Irish peasant girl," not from life, it is true, but from a water color, which is here before us. The specimen labeled No. 7 is placed in contact with a viewing screen. The original is here offered for comparison, so that you may judge of the fidelity of the reproduction to the colors of the

AMERICAN JOURNAL OF PHOTOGRAPHY,
AUGUST, 1896.



NEGATIVE.



POSITIVE.

PRINTS ILLUSTRATING THE JOLY PROCESS.

(COURTESY OF AMERICAN PHILOSOPHICAL SOCIETY.)

original. To prove the correctness of his theory, Prof. Joly here presents another specimen of the same subject, No. 12. This is taken and placed in contact with the same ("taking") screen. The great difference and the falsity of the color rendering will at once be noted by comparison with the original.

The next specimen is perhaps the most interesting one of all, on account of being an almost instantaneous picture.* It represents a military band in the Park of Trinity College, Dublin. It will be noted that the bright reds of the uniform coats are exceptionally well rendered. Further, this example indicates a possible application of this method of color reproduction to snapshot photography.

I now wish to call your attention to an interesting feature of this process, viz., the necessity for having the photograph and screen in exact register, and viewing it in a normal position. Viewed direct, this transparency shows the colors of nature; the brilliant red hue of the coats is especially noticeable. Now if we turn the transparency so as to view it at a slight angle, we at once note a change of the colors, and, in this particular instance, an apparent change of the nationality of the subjects; in place of English soldiers in bright red coats, we see a body of men dressed in brilliant green: in short, the Englishman appears to have been turned into an Irishman of the most pronounced type.

The next subject is a perfect representation of a green fluorescent bowl made of uranium glass.

We now come to another interesting specimen—a photograph of a bunch of wall flowers, executed in two color sensations only, viz., the red and green sensations. This picture derives an additional interest from the fact that it was made by Prof. Joly at the request of Lord Kelvin, to show the effect of "violet blindness," an extremely rare variety of color-blindness.

I now present to your notice two photographs of the solar spectrum from nature the first one made through a "taking" screen, and seen through a "viewing" screen, which, as you will perceive, shows some of the principal lines; the other one, both taken and viewed through the "viewing" screen, shows a false

* Actual time about three seconds.

color rendition. The yellow passing through the red lines only, is almost entirely represented by pure red. The incorrectness of the result is evident on comparing it with the first specimen or with nature.

I now come to the commercial part of this process. I have here for your inspection a specimen of three-color printing; the original photograph consists of a single negative; the printing was done from three separate half-tone blocks or plates—red, yellow and blue.

This result is obtained by making three positives in the camera from the original negative in the following manner: A special screen is prepared with black lines twice the width of those upon the taking screen, the intervening space being the width of a single line. This screen, when placed in register with the original negative, it will be observed, exposes only every third line of the negative. Now it will be obvious that if this screen be moved the width of a single line before each exposure, we shall obtain three positives, each showing but one-third of the original negative, and at the same time representing a different color sensation. An ordinary half-tone plate is now made from each positive, in the usual manner, and then printed successively in yellow, red and blue inks, the same as in the ordinary chromo-typographic or three-color process.

In the case under consideration you will note the almost perfect result, without the presence of the objectionable mathematical cross-line hatch-work.

This latter adaptation of the Joly process, I am informed, is the invention of two young men in this country; and should it prove practical and give certain results, it will without doubt be a great step forward in chromo-typography, and also have commercial value.

It is a curious fact that the foundations of the interesting processes I have described are based, and depend for their ultimate success, upon the ruling machine—an invention of Joseph Saxton, a former member of this Society, specimens of whose early photo-mechanical reproductions, made in 1841, are still in our possession.

In conclusion, I will state that the one great advantage which this process seems to offer over other schemes in heliochromy or the three-color process, is the fact that but a single negative is required, which is obtained by the ordinary methods of photography, so that all special or intricate apparatus, with uncertain results, are obviated. It will be further noted that the specimens shown here to-night are among the earliest ones made, with crude appliances as to the ruling of the screens and the pigments.

Edison's New Light.—Thomas A. Edison lately exhibited his new X-ray lamp in his laboratory at Orange, N. J.

The walls and the ceiling of the room where the experiment was made were covered with light-colored paper, in order to bring out the effect of the light. Mr. Edison closed the door and then called out "On." His assistant, in the next room, turned on the current, and the new lamp shone out, suspended in the centre of the room.

The light was a beautiful one, clear and white, and while Mr. Edison said it was only three and one-half or four candle power, yet, as the light was turned on and off and alternated with the sixteen candle power incandescent lamp, one could not see much difference between them in illuminating power.

The new lamp is simply a Crookes tube of the usual shape, about five inches long and two inches in diameter. The peculiarity of the light is in the interior of the bulb. When it is being made about a thimbleful of crystals of a new substance is introduced into the bulb, and the latter is slowly rotated in an intense heat just short of the melting point of the glass. The result is that the crystals of this new substance are distributed evenly all over the interior of the bulb and are fused by the high heat till they form a coating all over the inside, firmly adherent.

All that Mr. Edison would say about this material was that it was a natural mineral, very abundant and very cheap, and that it possessed nearly three times the fluorescent properties of the tungstate of calcium, which was also the discovery of the "Wizard." He says the energy consumption is marvelously small. *

THE HISTORICAL EVOLUTION OF PHOTOGRAPHURE METHODS IN INTAGLIO AND RELIEF.*

BY T. BOLAS, F.C.S., F.I.C.

CAMERA photography and photogravure, as the terms are commonly understood, took their birth between 1813 and 1816, by the labors of Nicéphore Niépce. He made sensitive varnishes—many common varnish materials being sensitive to light—and these varnishes he spread upon lithographic stones and metal plates. He first appears to have worked in copying music, written on paper, which was afterwards made translucent by waxing. His camera of 1816 he calls an "artificial eye," an excellent description, and it consisted of a square box fitted with an adjustable tube fitted with a lens. At this time he had two cameras, one of which is still in existence, and is now preserved in the museum of Chalon-sur-Saone. He first called his process "Heliographie," as he worked in direct sunshine; but he soon found that light acted as light, and he altered the name to Photographie. This change of name he made in 1816. Before the end of 1817 he had experimented with various varnish materials; also yellow phosphorus, and chloride of silver, as sensitive substances.

In 1822 he obtained a photograph on glass, which was exhibited at Paris, but the earliest work of Niépce now known to be in existence is a photogravure of a portrait of Cardinal d'Amboise, made in 1824. This was doubtless made by the bitumen process.

Early in 1826 the Paris optician Charles Chevalier made an improve camera for Niépce, and afterwards introduced Niépce to Daguerre, but this gentleman took little or no interest in the production of printing surfaces. Although Niépce visited England in 1827, and made a camera picture from the window of his lodgings at Kew, I think the first photogravure plates made in this country were those made by W. R. Grove, author of the "Correlation of the Physical Forces," and who quite recently

* Read before the Royal Photographic Society of Great Britain.

figured often in the daily papers as Mr. Justice Grove. Grove about 1840 made the daguerrotype plate the anode in an electrolytic cell, and obtained a very delicate intaglio, but rather shallow for printing. Electrotypes casts of the daguerreotype plate made about the same time by Chevalier were still more delicate and beautiful, but without ink-holding roughness, or sufficient depth for useful printing.

Claudet in 1843 describes something which is more practical in the matter of etching daguerreotype plates (English patent 9957 of A.D. 1843), in which he adopts rebiting. He fills the hollows with ink, and gilds the bare parts, so that the gold film can serve as a resist in further etching. He also indicates the principle of the wearing film. He covered his silver-faced plate with a thin film of electrolytic copper; when this had been worn out by printing he dissolved it off and renewed it for further impressions.

We now come to two processes of intaglio photogravure which arose and arrived at maturity between 1850 and 1860, but the time not being then ripe for the general introduction of this class of work, neither the process of Talbot nor that of Pretsch was largely adopted. Talbot etched the plate through a plate of film of bichromated gelatine positive, while Pretsch obtained his plate by moulding from the swelled and reticulated gelatine film, and the various samples I show will enable you to judge whether any essential advance has been made in photo-intaglio engraving since the time of Talbot and Pretsch. Talbot obtained his grain by dusting resinous powder on the film and melting this powder, and he also suggested the use of textile screens for assisting in giving an ink-holding grain; while C. J. Burnett in 1857, (*Journal of the Photographic Society*, 1858, p. 98) suggested screens of crossed or uncrossed lines ruled on glass, or random dots on a separate glass. He also suggested the use of the resin for giving the grain, next to the metal instead of outside the film. Berchtold about a year later, suggested using line screens on glass with shift at right angles.

In the processes above mentioned, we have a basis equally for photogravure in relief, and results obtained in this direction by

the Pretsch process are among the best results hitherto obtained. The Talbot process as modified by Klic and others is now giving in the hands of many the very best results in photogravure in relief for the typographic press.

PHOTOGRAPHS IN TRUE TINTS. (?)

THE announcement now comes from Chicago, under date of June 25th, and we reprint without comment, the old story that photography in colors has at last been accomplished. The results of this long-awaited achievement are not simply garish reds, blues and yellows. Pictures have been taken that show seventeen distinct shades of color. The process was hit upon over night. Years of time and thousands of dollars were spent before success was reached. For thirty years James W. McDonough has been laboring in Chicago to produce photographs in colors. Thousands of experiments were performed till one day, fifteen years ago, he got upon the right track. Capital then came to his aid, but the successful end was not yet. Over in Dublin, Ireland, Prof. Joly, the scientist, was working along the same line. Success crowned his efforts of a few months ago. He sought letters patent in London and in Washington. To his utter astonishment he found McDonough ahead of him in an application for an American patent. Both men, thousands of miles apart and working independently, had hit upon the secret.

AT THE PATENT OFFICE.—Soon the Patent Office at Washington was overwhelmed with rival claims of inventors. The men who had been backing McDonough came to the rescue. They were willing that the one whose claim was allowed should get a share in the profits of the company to be formed. The other, even if defeated, should get a satisfaction fee. So, as they arranged it, no matter which won, capital would come out on top, too. McDonough got the patent after a contest. Joly got the fee. Ten days ago a lawyer appeared in Richmond, Va., and as a result the Natural Color Photographing and Printing Com-

pany was incorporated under the laws of Virginia. So well was his work done that none of the names of the men interested appeared. The corporation got a charter and \$500,000 capital was provided for, with permission to increase to \$5,000,000. Yesterday the secret became public, and a company has been formed with ample capital to carry on the business.

HOW IT IS DONE.—The process requires a specially ruled screen and specially ruled paper. A multi-colored screen, ruled by very fine lines, formed of dots or small particles, is employed. Fundamental colors of the spectrum are preferably used for these lines—say, orange red, a yellowish green, and a violet blue.

The screen is ruled with lines in these colors, about 300 to the inch. This screen is placed in front of and in close contact with an orthochromatic plate, which is then exposed in the camera to the object to be photographed. The ordinary black and white negative is thus obtained in lines corresponding to the screen in register.

From this negative a positive is made in the ordinary way on glass or paper. If now the screen, or a similarly ruled one, be laid on the positive, and moved until the positive and screen are in register, the picture comes up in original colors.

THE PROCESS IS CHEAP.—The color screens are easily and cheaply prepared. Inexpensive machinery does the delicate ruling required, and as for the paper, it needs no special manufacturing. Orthochromatic plates are only a trifle more expensive than ordinary dry plates. The difference lies in the fact that the common dry plate does not show up colors in their relative values in black and white, while the orthochromatic one does, aided by a specially prepared developer.

Physicians are usually very "close-mouthed," in regard to their professional duties. But a London jury found a good sized exception recently, and rendered a verdict for \$60,000 against a noted physician because he used information obtained, while acting as surgeon, to damage the reputation of a patient.

HALF-TONE ETCHING ON COPPER.

[COMMUNICATED.]

IN the beginning of 1892 I brought out what has become generally known as "the fish glue enamel process," and in October of the same year published an article in the *Artist Printer*, of Chicago, giving the details of the process and instructions how to work it. That article was widely reprinted on both sides of the Atlantic, and I think I am justified in supposing that part of the very general improvements in half-tone blocks is due to the widespread adoption of the process.

In the general working of the process there has been comparatively little change, but in the fish glue there has been certain improvement. In my original article I strongly recommended ——'s fish glue, principally because, having had satisfactory results from it, I did not think it necessary or advisable to look for any other. There came a time, however, when I had reason to complain of the keeping qualities of this brand and its strong tendency to become acid, which was fatal to satisfactory working. I then tried Le Page's glue, which I found excellent and wonderfully constant, and it had this other advantage that it could be bought in small quantity at any hardware store. The demand, however, has been so great that the firm of Le Page has made improvements in their glue for this process, and now send out a specially clarified brand which leaves nothing to be desired in the manufacture of a printing solution.

The formula, as it now stands with the trial of nearly three years, is as follows :

Clarified Glue, LE PAGE'S	-	-	-	-	2 ounces
Water	-	-	-	-	2 ounces
Bichromate of Ammonia, Merck's	-	-	-	-	120 grains
Water	-	-	-	-	2 ounces
Albumen (dried)	-	-	-	-	1-4 ounces
Water	-	-	-	-	4 ounces
Chromic Acid (C. P.)	-	-	-	-	10 grains

This prints quickly, develops easily and gives every detail there

is in the negative, and for a high average of work cannot be beaten.

The methods of burning in are now so well known that it is unnecessary to go into details, but no one need be afraid of a lifting in the etching solution.

The whole process is one of the utmost simplicity, and no one should have the least difficulty in getting the very best results.

W. H. HYSLOP.

Currents for X-ray Work.—Drs. Edwin J. Houston and A. E. Kennelly have given the following directions for using the ordinary alternating lighting current for X-ray work. To the primary terminals of an induction coil are connected leads from a fifty volt alternating current circuit. The secondary of the induction coil connects with a battery of Leyden jars and with the primary of the Tesla coil. The Tesla coil is made by winding about eighteen turns of No. 19 cotton-covered wire on a glass tube about $\frac{3}{4}$ in. in diameter. Over this is passed a slightly larger glass tube wound with about 400 turns of No. 31 silk-covered wire. The whole is immersed in a jar of resin oil. The Crookes tube is connected to the secondary of the Tesla coil. This arrangement gives the disruptive discharge, which is of increased effect, and less likely to injure the tubes. The discharging electrodes of the induction coil are placed about 5 mm. (0.2 in.) apart. To secure sharp images the use of a metal plate perforated and used as a diaphragm is recommended.

New Hotel Rules.—Guests are requested not to speak to the dumb waiter.

Guests wishing to rise early without being called, can have self-raising flour for supper.

Guests wishing to do a little driving will find hammer and nails in the closet.

If your room gets too warm open the window and let the fire escape.

If you are fond of athletics and like jumping, lift the mattress and see the spring.

If the lamp goes out, take a feather out of the pillow; that is light enough.

Don't worry about your bill; the house is supported on foundations.

THE COMING TOTAL SOLAR ECLIPSE.

BY CAPTAIN E. H. HILLS, R. E.

BEFORE considering the question of the observations to be made during a solar eclipse, and the character of the results that we look for, it is necessary to briefly recapitulate our present state of knowledge of the conditions obtaining on the solar surface. The portion of the sun's rays that is visible to the eye, and the edge of which forms the visible disc of the sun, has been termed the photosphere. It is a surface emitting *white* light, so that it consists of either a solid or liquid incandescent surface, or possibly a mass of gas, but in this case under conditions to which we have no analogy on the earth. The photosphere, therefore, emits a continuous spectrum. Above the photosphere is found a region where metallic vapors predominate. These exercise a selective absorption on the spectrum and give rise to the dark lines of the solar spectrum. Higher still we find the lighter vapors, hydrogen, calcium and magnesium, and occasionally iron. This portion is termed the chromosphere, and from it arise the prominences or red flames seen around the sun during a total eclipse. These prominences can be seen at any time by means of the spectroscope, and can be photographed by several different methods.

(1) Directly during a total eclipse. This method is not of much practical value, there being better ones available for the purpose.

(2) With the prismatic camera during a total eclipse. This instrument, which is simply a prism placed in front of the object glass of a photographic telescope, splits up the light from the eclipsed sun into a spectrum, and, instead of a band, gives a series of rings, each ring corresponding to a bright line in the spectrum of the prominence, and showing the form of the whole chromosphere in light of that particular wave length.

(3) By the spectro-heliograph. An instrument which, by taking advantage of the fact that the chromosphere gives a bright-line spectrum, whereas the sun gives dark lines, renders

it possible to photograph wherever any particular line is reversed, *i.e.*, changed from a dark line to a bright one, and as these reversals occur over a prominence, the sum total of their effect is an image of the prominence. For this an eclipse is not necessary.

Prominences may be divided into two classes, (1) cloudy, consisting chiefly of hydrogen and calcium; (2) eruptive, consisting of other metallic vapors, such as magnesium and iron. Outside the chromosphere is seen the corona, which can only be seen during a total eclipse. The corona is a very difficult object to draw; in fact, it may fairly be said that drawings of it are quite useless.

To photograph it successfully, we want a fairly large image, obtained by photo-heliograph or telephoto lens. Very good photographs of the inner or brighter portion of the corona were taken by Mr. Schaeberle, in 1893, with a lens of forty feet focal length. A long exposure is not much use unless the air is very clear, as it tends to decrease the contrast between corona and diffused skylight. The spectrum of the corona is best observed by a spectroscope of ordinary form, throwing an image of the eclipsed sun on the slit. The spectrum thus photographed shows many interesting features. The corona gives a continuous spectrum crossed by a number of faint bright lines, which do not appear to correspond to the lines of any human element. At the outside is seen a dark-line spectrum, due to the reflection of sunlight from solid particles in the corona. At the same time the point of maximum sensitiveness of the plate is shifted towards the red end of the spectrum as compared with sunlight. This proves that the light of the corona cannot be due in any great measure to sunlight reflected from small particles.

M. Deslandres, in 1893, tried to measure the velocity of rotation of the corona, and came to the conclusion that it revolved with the sun.

Unfortunately, there is up to the present time no perfectly satisfactory theory as to what the corona is, or what it is caused by.

Now, as regards the coming eclipse of August, 1896, this will be visible from Norway and Japan, so that as both these countries

are easily accessible in these days of travel, there is a very good opportunity for amateur observers, an opportunity which it is hoped will be made the most of.

In mounting instruments we may either choose the equatorial form of mounting, or place them in a horizontal position and reflect the light into them by means of a heliostat. In a high latitude, such as the north of Norway, an ordinary altazimuth telescope stand can be converted into an equatorial by tipping up one of the legs so as to incline the axis at an angle of about 20° from the vertical. Good direct photographs of the corona might no doubt be obtained with an ordinary camera, furnished with a telephoto lens, mounted on a telescope stand with the telescope by its side for guiding purposes, and driven by hand. Of course only comparatively short exposures should be attempted.

The observer who is furnished with a spectroscope arranged for photography could mount it in a similar manner and obtain very interesting results. In this case accuracy in driving is of little importance.—*The Journal of the Camera Club.*

Jewelry Conceits.—Finger rings are more elaborate than ever and are worn *ad libitum*.

Sterling silver buttons for ladies' outing shirts are new and fashionable.

Cameo glass vinaigrettes with gold tops add to an extensive collection in this direction.

Shell and amber combs with tops of gold set with pearls and diamonds are in high favor.

A dainty trifle for the workbasket is a gold mounted wax ball in the shape of a tomato.

Square gold locket with a solitaire diamond in the centre are worn on men's watch chains.

The demantoid or green garnet is effectively mounted in finger rings of various designs—single, cluster, and in combination with diamonds.

—*Jewelers' Circular.*

THE PHOTOSCOPE.

THIS is an opera, field, or marine glass, which can be converted in one minute into a photographic machine, and *vice versa*, without altering its outward appearance. Being an entirely new departure in photographic apparatus it will be necessary to give a particularly full and detailed description of its construction and capabilities. All cameras which have appeared on the market, so far, being simply improvements on others pre-existing, require but little explanation, the same principles of construction and action being more or less observable in each case; consequently, it follows that the possessor of an "improved" machine has very little to learn, provided that he is acquainted with the manipulation of the ordinary camera.

It must have occurred to many how admirably the opera glass, by its structural shape and accurate method of focussing (so well known to all), is adapted to photographic purposes, and one is apt to wonder how so beautiful an instrument should have so long escaped the attention of the ingenious inventor and the enterprising novelty dealer, especially when it is considered that such articles as hats, neckties, watches, purses, guns, tinbreasts, books, and numberless packages and boxes have been pressed into service under the generic term "detective."

Before describing the mechanical and optical principles employed in the construction of the photoscope, it is necessary to explain that when the instrument (which has the triple character of being an opera glass, a camera, and a telescope) is used for photographic purposes it is held in the reverse way, that is to say, the "hooded" or larger end is placed to the eyes.

It will be as well to mention here that the term "hoods," when, used in connection with the photoscope, is not a strictly accurate one, inasmuch as the broad sliding tubes used to shade the objectives from the vertical sun rays are, in this case, utilized as depositories for certain parts of the internal mechanism, such as the roll-holder (or plate), ground glass screen, etc. Of course, when the instrument is reconverted from a camera to an opera

glass, the hoods become hoods proper and serve their original purpose.

In experimenting to find a more rapid and accurate method of focussing the photographic image than usually employed, it was found that when a pair of opera glasses were mounted in conjunction with a photographic lens of the same focus, and racked in unison, the focus of both systems coincided.

This principle being established, it was decided to test it in a different manner; and for this purpose a pair of marine glasses, with hoods and tubes slightly larger than usual, were made, one barrel serving the purpose of a camera and the other that of view-finder and focusser. To still increase the diameter of the hoods (without widening the space between the eye-pieces) they were joined, thus giving ample room for the internal mechanism.

A pair of twin photographic lenses were then fitted in the cells originally occupied by the condensing lenses or eye-pieces, and a ground glass screen placed in the camera tube, whilst a telescopic eye-piece especially ground was mounted in the other. The instrument was then taken to the top of a building and levelled at a belfry tower about a quarter of a mile distant, and carefully focussed, until the strands of the bell-rope were distinctly visible. It was then found, on magnifying the image on the ground glass, that the details were equally sharp, thus conclusively proving that the two systems of focussing, namely, the telescopic and photographic, exactly coincided. It is desirable to emphasize the fact that, in this experiment, one of the twin photographic lenses acted as a telescopic objective.

It may be pointed out wherein the "photoscope" excels. Being an opera, field, or marine glass, independent of its photographic functions, and that form being still preserved when it is converted into a photographic apparatus, it can be used where no other camera is available, and without arousing the slightest suspicion as to the purpose of the operator—which in itself constitutes it a detective camera, in the true sense of the word. The focussing being done in the manner of all binoculars, *moving objects may be followed and kept in view through the glass until the desired moment, when they can be secured with the absolute*

certainty of receiving the correct exposure and being in the right position on the plate. This, in itself, is a great advantage; but when it is coupled with that of the microscopic sharpness in focussing, the instrument will be admitted to be a valuable power in the hands of those who take negatives with a view to subsequent enlargements. The telescopic principle utilized also permits of objects being taken, and pictures selected at long distances, the milled-wheel and screw system of focussing for this purpose making it vastly superior to the ordinary sliding telescope.

The "Photoscope" will be found invaluable to detectives, army and ships' officers, scouts, artists, architects, surveyors, engineers, tourists, and sportsmen, etc. It will be specially valuable on the race course and coursing ground, and its elegant shape and ease in handling make it the *beau ideal* of a lady's camera, obtaining the object, as it does without marring the grace of the operator.

It must not be forgotten that in purchasing a "Photoscope" the buyer becomes the possessor of three distinct instruments, viz., an opera, field, or marine glass, a telescope with an accurate system of focussing unknown before in single telescopes, and an up-to-date camera with movements and appliances far in advance of anything of the kind that has gone before.

The Humour of It.—An awful tragedy occurred at a recent radiograph party in "The Hub" (U. S., of course.) The story leaked out in the strictest confidence. A young woman in the Back Bay set consented to have made a radiograph of her hand. The picture was a pronounced success. She was so delighted that she had several copies made to give to her friends. When the picture was taken she wore a handsome diamond solitaire, which appears on the print as a black spot in her ring. But unfortunately some prying scientist discovered that the X ray was an infallible test of a genuine diamond, and that a real stone would transmit the rays as easily as glass permits the passage of light, while a spurious stone was opaque to them. Now the young lady wishes she had removed her ring before the picture was taken. The young man who gave it cannot trust himself to mention X rays.

PHOTOGRAPHY IN NATURAL COLORS.*

(Continued from page 318.)

BEFORE proceeding to consider the application of Wiener's method of observation to the various processes of color-photography now known, it will be well to state exactly which particular forms of the old processes Wiener used, especially since many of them have been modified from time to time by other experimenters.

SEEBECK'S PROCESS.—The form generally employed was that in which silver chloride, previously darkened by exposure, was exposed to light in the form of powder. Pure silver chloride was dried in the dark, then enclosed between two glass plates and exposed first to violet and ultra-violet, and afterwards to white light, until it acquired a moderately dark violet color. A special modification which Wiener adopted is to shake up the powdered silver chloride with collodion, pour the mixture on a glass plate, allow it to dry, and cover it with another glass plate. It is then exposed to light as in the original process. This method of working not only gives colors which are more distinct, but it has special advantages when using the prism method of observation.

BECQUEREL'S PROCESS.—Wiener used exclusively the method peculiar to Becquerel, in which a silver plate is chlorinated by means of an electric current, but he did not heat the plates after chlorination. As a rule, flat copper or brass plates coated with silver by electrolysis were used, and it was found, as Becquerel and others have observed, that the precise method of chlorination exerts an important influence on the results. The silvered plate constituted the positive electrode or anode in a solution prepared by diluting concentrated hydrochloric acid with eight times its volume of water. A current of from two to four amperes was employed when the area of the plate was about thirty square centimetres, and the action was allowed to continue for some seconds only. The thickness of the film of chloride is

*C. H. B., in *Photography*.

a very important factor in determining the results, and according to Becquerel the best thickness is obtained when the current is sufficiently strong to liberate 0.067 cc. of hydrogen gas for every square centimetre in the area of the plate. This yields a film about 0.0016 mm. After chlorination the films were quickly dried on blotting paper and rubbed with soft leather.

Guntz's investigations on the subchloride and other sub-salts of silver have rendered it in the highest degree probable that the darkening of silver chloride when exposed to light is chiefly due to the formation of silver subchloride. Becquerel found that when pure silver chloride is exposed to the spectrum it becomes violet under the influence of the violet and ultra-violet rays. Wiener has repeated these experiments, and confirms Becquerel's statement. It was, however, obviously of great interest to ascertain the behavior of pure silver subchloride when exposed to the spectrum, and this Wiener has done. Silver subchloride was prepared by Guntz's process and exposed to the spectrum. Its preparation is somewhat difficult, and it is doubtful whether it has yet been obtained quite free from ordinary silver chloride. In the spectrum the violet-colored silver subchloride behaves exactly like silver chloride that has previously been exposed to light. In other words, it is sensitive to all the rays of the spectrum, and this result affords a very interesting and quite independent proof of Guntz's view, that silver subchloride is formed by the action of light on silver chloride. It may also be noted that a mixture of silver chloride and the subchloride has exactly the same violet color as silver chloride that has been exposed to light.

There can be little doubt that the chlorinated silver film obtained by Becquerel's galvanic process contains some silver subchloride, for it is sensitive to all the rays of the spectrum, whereas silver chloride is sensitive only to the violet and ultra-violet. On the other hand, it is very improbable that it consists of the subchloride alone.

In the course of his experiments, Wiener once got a plate, by Becquerel's method, that was sensitive to violet and ultra-violet only. It follows that silver chloride only was present,

without any subchloride. The conditions of the experiment had not been very carefully attended to, and probably the electric current was much weaker than it ought to have been. A similar plate sensitive to violet and ultra-violet only was obtained by using a current of only 0.2 ampere. It seems certain that such a plate contains little or no subchloride, and there is evidence that the proportion of subchloride present increases, up to a certain point at any rate, with the strength of the current. A further proof of the presence of the subchloride and its formation during the process of chlorination is furnished by the fact that when the chlorinated film is removed from one of the silver plates it is found to be violet by transmitted light.

POITEVIN'S PROCESS.—This was used with the modifications made by Zenker and by Krone. Rives paper was successfully immersed in a ten per cent. solution of common salt for two minutes, and in an eight per cent. solution of silver nitre for one minute and quickly washed. It was then placed in a five per cent. solution of stannous chloride, in diffused daylight, until it acquired a moderately dark color. It was next immersed in a mixture of one part of a concentrated solution of potassium bichromate and two parts of a concentrated solution of copper sulphate and afterwards kept between sheets of filter paper. Moisture seems to exert considerable influence on the reproduction of colors by paper prepared in this way, and if it has become very dry, it should be slightly moistened before exposure. No development is required, and the colors make their appearance during the exposure. Wiener made no attempt to fix the colors.

Some observations made by Wiener, in conjunction with some of his colleagues, as to the relative excellence of the color rendering by the different older processes are not without interest. Becquerel's plates give the best reproduction of the colors. They are lustrous, like those obtained by Lippman's method, and in the case of the spectrum they are in their right places. In both Seebeck's and Poitevin's processes, the colors are dullish and do not represent the original so exactly. In Seebeck's process only blue and red are obtained distinctly, in addition to violet, and the

red is only rose red, and the blue a grey blue. Green as a rule is very indistinct, and yellow is not recognizable as yellow, though there is a distinct lightening of the violet background where the yellow ought to be. In Poitevin's process all the colors do appear more or less distinctly, but a yellow-brown hue tends to preponderate, and the yellow of the spectrum is represented by an orange-colored image similar in hue to paper moistened with potassium bi-chromate.

Lippman's process has the advantage over Becquerel's that it is more sensitive, and the colored images can be more readily and more completely fixed. On the other hand, it has the disadvantage that the colors depend upon the change with the angle of the incident light, and the plates must be observed by bright reflected light. With Becquerel's plates the colors alter so little with changes in the angle of the incident light, that it was a long time before any change at all was recognized. Moreover, the colors can also be seen in diffused light. Generally speaking, the images on Becquerel's plates give the impression that they are pigment-colors rather than interference-colors, but it will be seen subsequently that this is not the fact, and the impression referred to is the result of the highly refractive character of the film that carries the colored image. It is possible that the same advantages might be given to Lippman's process, and it might even be made applicable to paper, if the refractive index of the gelatine could be largely increased by the addition of some suitable substance, or if some material having a much larger refractive index could be used in place of gelatine. Whether this could be done without losing some of the advantages of the process it is impossible to predict in the present state of our knowledge.

APPLICATION OF THE PRISM METHOD TO THE OLDER PROCESSES.—When colored spectra obtained by Becquerel's method are examined under the right-angled prism in the manner already described, there is a marked shifting of the colors. In one experiment the part which was yellow by direct light was green under the prism, whilst the green-blue region became full blue under the prism. In a second experiment made with a different plate, the part that was yellow-green by direct light was green-

blue under the prism. The degree of shifting varies with different plates, probably because of variations in the refractive power of the films, resulting from differences in their chemical composition. These results are fairly conclusive by themselves, but other experiments were made with a view to put the matter beyond all doubt. A Becquerel film on which a colored spectrum had been produced was stripped from the silver plate by means of a superposed film of gelatine in the manner described by Wernicke in *Wiedemann's Annalen*, 1887, vol. 30, page 462. When this is done it is found that the back of the film shows colors by reflected light, although their positions differ considerably from those which they occupy when seen from the front of the film, and the hues of the colors are also altered. It is inconceivable that these changes should take place if the colors were pigment-colors, and they can only be explained on the assumption that they are interference-colors.

It will be seen that all the observations agree in showing that the colors obtained on Becquerel's plates are mainly, if not entirely, interference-colors. It follows that so far as Becquerel's plates are concerned, Zenker's theory, that the reproduction of the colors is an effect produced by "standing waves," is correct. A shifting of the colors similar to that observed by Wiener with Becquerel plates has already been observed with Lippman plates when examined from the glass side and the film side respectively, but Wiener is unable to accept any explanation of this phenomenon that has so far been put forward. He promises a further communication on the problem.

In Seebeck's process the sensitive material is the same as in Becquerel's process, but the physical form of it is different. Seebeck uses the mixture of silver chloride and subchloride in the form of a powder, whilst Becquerel's method produces a continuous film of similar composition. This condition of the material in Seebeck's method introduces certain difficulties when making observations with the prism. It is not sufficient to put benzine between the prism and the top plate, but the air must also be driven out from amongst the particles of the silver salts. The liquid used for this purpose must have a high refractive

index, and benzine was selected. It is impossible to introduce the benzine after the exposure has been made, because all the particles would be disturbed. The plan eventually adopted was to use a metal frame with a front of mica, 0.08 mm. thick. This was first filled with benzine, and the silver salt rammed in afterwards. The presence of the benzine does not interfere with the reproduction of the colors; in fact, they appear more rapidly because the benzine acts as a sensitizer in consequence of its power of combining with the chlorine liberated from the silver salt by the action of the light. This very fact, however, introduces a further difficulty. The observations with the prism must be made in daylight, and the light acts so rapidly on the silver salt saturated with benzine that the colors alter from this cause whilst the observation is being made. The experiment must, therefore, be made as rapidly as possible.

The reference line was placed on the red, and was scratched on the mica with a diamond, and then blackened by means of soot. Notwithstanding the difficulties the experiments were fairly conclusive, and there was no displacement of the colors towards the reference line. It was, however, with a view to secure greater certainty that Wiener adopted the modification already referred to, of shaking up the silver chloride with collodion film itself, and the observations are easier and much more definite. It is obvious, however, that even in this case unnecessary exposure to light must be avoided, and the best plan is to make the observation in a darkened room, the necessary light being admitted through a hole in the shutter, and diffused by means of two sheets of filter paper. In no case is any shifting of the colors observed, and it follows that *the colors obtained by Seebeck's process are pigment-colors and not interference-colors.*

(To be continued.)

In Wichita, Kansas, the United States District Court directed the professor of electricity in the State University to examine a man claiming a fractured arm, in a suit for damages against the Santa Fe Railroad. The cathode ray process was to be used.

PECULIARITIES OF MEMORY.

AS an instance of wonderful memory it is related of Thomas Babington Macaulay, the English historian, that on a wager he committed to memory a whole page of the *London Times* and repeated it *verbatim et literatim*, advertisements and all. But a still more remarkable case of memory is related by Dr. Macklin, the eminent actor and dramatist. It is of a man who waited on the Greffier Fagel—a famous Dutchman—to display his wonderful memory, offering to give any proof of it that might be required. A newspaper was lying on the table, and he was requested to read it through and then repeat it *verbatim*. He accordingly did so, without omitting a single word, from the title to the imprint at the end. The Greffier Fagel expressed his astonishment at the performance, when the man said: "Oh, this is nothing. Shall I repeat the same backward?" "It is impossible!" exclaimed the Greffier. "By no means," said the other, "if you have the patience to hear it." He then, without the least hesitation, repeated every separate article, beginning at the imprint and ending at the title.

A strolling player at Edinburgh, of the name of William Lyon, had a most astonishing memory. He one evening made a bet of a bowl of punch that he would, at the rehearsal the next morning, repeat the whole of the *Daily Advertiser* from beginning to end. Being called on the next day, he handed the newspaper to a gentleman present, to see that he repeated every word correctly. The task he accomplished without making the slightest error, through all the varieties of advertisements, prices of stocks, foreign and domestic news, accidents, offences, law intelligence, etc.

Thomas Fuller was an author, and wrote the "History of the Worthies of England" and many other valuable works. Astonishing things are reported of his memory. From once hearing a sermon, he could repeat the whole of it *verbatim*. He undertook, in going from Temple Bar to the farther end of Cheapside, in

London, to tell, at his return, every single sign as it stood in order, on both sides of the way, repeating them either backwards or forwards, which he performed exactly. He was a learned, in-

dustrious, lively writer, but rather fond of punning. He was a very corpulent man, and once, as he was riding with a gentleman of the name of Sparrowhawk, he could not resist the passing of a joke upon him. "Pray, what is the difference," he asked, "between an owl and a sparrowhawk?" The other answered this sarcastic question in this served-him-right way: "An owl is fuller in the head, fuller in the body and fuller all over."

Cook, the tragedian, is another instance of a man with a marvelous memory. He could study a part in a fraction of the time it would take others to commit the same to memory. It is said that, for a wager, on one occasion, he committed to memory the entire contents of a daily newspaper in the space of eight hours.

Here is a curious case of remarkable memory in this country, which was related some fifty years ago. A Miss Louisa West a girl 15 years of age, committed to memory, accurately, the whole of the New Testament in six weeks, at the same time attending to her domestic duties.

"CYCLING AND PHOTOGRAPHY."

PERHAPS one of the most wonderful signs of late years is the widespread popularity the camera and cycle have attained, nor is it to be wondered at when the pleasure to be derived from indulging in either form of amusement, riding or photographing, is remembered; yet it is a matter of surprise to find the two are not more often combined than is done, considering the vast number of those who now use a cycle as the means of running out into the country for a brief spell. We all know the enjoyment derived in this manner—the delight experienced in passing through a stretch of beautiful scenery, the many pleasant glimpses of rural life obtained, happy groups of children playing in the lanes, cattle and sheep forming bright spots of life in meadows and many other phases of nature which attract us by their beauty and leave pleasant recollections on our mind, yet at best they are fleeting, and it is in just the ability to secure permanent records of these matters, with which to renew to ourselves and friends, during the dark, dull days of winter time, in some measure the

pleasant scenes visited in summer months, that a small, light camera will prove useful. It need be but a compact affair. For convenience a quarterplate will prove sufficiently large, while with three double dark slides, enabling six plates being carried with a lens and shutter. The whole may be packed in small case and strapped to the handle bar, the tripod being carried attached to the fork of the machine, without any inconvenience from the trifling addition in weight being felt, for the whole need weigh no more than two or three pounds.—*The Amateur (London) Photographer.*

Chronicles of Cycles.—Now it came to pass that a plague of wheels fell upon the land, sparing neither the aged greybeard, the todding child nor the shirt-waisted maiden.

And on the day of the week known commonly as Sunday, each man gat him on his wheel and sped into the country afar from town, nor took notice of the pealing of the bells of the sanctuary.

And those who preached in the sanctuary were troubled in their hearts, and lifted up their voices against the wheel, but their words fell only on the alleged ears of the walls of the sanctuary.

And the wheels whirled afar off.

Then gat together the orators of the sanctuaries and said, one to another: "We must do something."

And from the multitude of considerations made they this plan:

Each man of them should betake him to a distance of ten miles from the city and bestrew the highway with carpet tacks.

And on the following Sunday it was done.

And behold as each wheelman and each wheelgirl would come to the place of the tacks, his or her tire would give up the ghost, and he or she would halt for a time by the wayside.

And when a great number was gathered together in this manner, the orator of the sanctuary would preach to them on the virtues of patience and resignation.

Now, on the day after, which was Monday, the orators of the sanctuary gathered together and held counsel in review of their work.

"Verily," said one of the weak heart and timid, "I fear that they spent more time in profanely bewailing their distress than in considering our words." But the others bade him go to, and said: "Of what weight is that? Did we not make them hear the words we had to say?"

The Editorial Dropshutter.

Voice Production.—A lecture on "Voice Production" and a demonstration of the method of analyzing or testing the quality of a voice by means of photographs were given last evening by Dr. Floyd S. Muckey, a New York throat specialist, at the Germantown Association Hall, Philadelphia.

Dr. Muckey, who was introduced to the audience by Professor J. McCombie Murray, showed in the first place that a string, vibrated by a fiddle bow, gives forth a number of partial tones in addition to the fundamental tone of the string. He then proceeded to show that the vocal chords in the human throat vibrate similarly to a string, and he contended that the quality of the voice depended very largely upon the number of partial tones produced.

The use of the resonant cavities of the nose, pharynx and mouth in giving volume to the sound was also explained, and the speaker said that one of the main requisites of good singing consists in bringing into operation all the functions that nature has provided. Many singers, he said, had a way of pushing back the soft palate at the rear of the mouth so that they close the pharynx and prevent the sound from entering the upper pharynx and the nose. In this way the resonance of the upper cavities is lost, and the closing of the pharynx also causes a contraction of the muscles at the rear of the mouth, which prevents the vocal chords being operated to their full extent.

Dr. Muckey showed the apparatus which, in conjunction with Dr. William Hallock, he had devised for photographing voice production. It consists of a number of resonators, which are arranged so that they will vibrate in response to the various partial tones that may be present when a given note is sounded. Each of the resonators is connected by means of a vibrating diaphragm with a tiny gas flame, arranged so that the flame will pulsate when the diaphragm moves. The pulsation of the various flames is recorded by means of photographs. Thus the resonators catch the partial tones which are present. Their presence is rendered visible by flames, and the photograph records the result. It is therefore possible, Dr. Muckey claims, to analyze any voice completely and show where it is imperfect. A number of photographs were then thrown upon the screen, and Dr. Muckey pointed out how strong, full voices could be shown to possess all the partial tones and how inferior voices are deficient in some of them.

Snap Shots at the Sun.—The most remarkable feature in the equipment of Lick Observatory expedition for observing the total solar eclipse of August next in Japan is the telescope to be used by Director Burckhalter, of the Chabot Observatory, in Oakland, who accompanies the expedition. His plan is that of giving the correct exposure for each part of every photographic plate at an eclipse. The telescope for this purpose is of four inches aperture, and fifteen feet focus, mounted equatorially, and will follow the sun. The image of the eclipsed sun will fall on the negative plate, in front of which is a rapidly rotating diaphragm; the plate has a hole in its centre, through which passes an axis driven by clockwork, and on the end of the axis in front of the plate, and close to it, is a rotating fan or diaphragm. The diaphragm is cut into the shape of a double cam, one cam being inverted, so that it is perfectly in balance, and it makes about five revolutions per second. When the plate-holder is lifted the clock starts automatically and runs for about fifteen minutes. Five or six such plates will be exposed during totality, and each plate will be exposed much longer at the outer limits of the corona, where the light is weakest, than at the limit, where the light is strongest. It is, therefore, hoped to secure in this way a photograph of the corona on a single plate, every part of which has received the proper exposure, this single plate will then exhibit all the details of the corona, instead of having to build up, as it were, the real corona from a series of different plates.

Improvement in Lens Mounts.—Messrs. Ross & Co. have succeeded in still further improving their Ross-Zeiss Convertible Anastigmats. It has always been their aim to make their lenses as compact as possible, as will be seen in the Ross-Zeiss Lenses, the mounts in these lenses being considerably smaller than those of the inventor's or any other licensee.

The smaller series of Ross-Goerz Lenses are admirably adapted for hand cameras, the flange being set at the centre of the lens and the hood removable so that a 5x7 Ross-Goerz Lens takes up only three-quarters of an inch of space in the camera.

The difference in the new Convertible Anastigmats is still more marked, the size of the mount being reduced almost one-half. This makes the smaller sizes adaptable to hand cameras, which has not been the case up to the present time.

A New Photographic Paper.—Ferdinand Hrdliczka, of Vienna, has placed on the market a new and improved artistic paper under the name "Vindobona Rembrandt-Celloidin Paper." This paper, it is

claimed, gives fine results from thin negatives, which under conditions where the older papers are used are next to valueless. In the prospectus which has reached us, there are a number of comparative prints showing the great superiority of the new paper over the ordinary gelatin and celloidin papers. The manufacturer, Hrdliczka, claims, in this instance, to have solved one of the most important photographic problems. The subject is well worthy of the notice and investigation of the professional photographer. We understand that circulars and sample sheets of the new paper are to be had upon application to the manufacturer.

In connection with this new paper a simple combined fixing and toning bath is given :

Distilled water,	100 cm.
Hyposulphite of soda,	200 gr.
Nitrate of lead,	19 gr.

Just before use add

Solution chloride of gold, 1 : 200. 100 cm.

On account of the extreme cheapness of this bath, it is advisable to use it only for a single lot of prints, making up fresh from the two stock solutions for each lot.

Scarcely more than ten years ago we were told that photographic lenses could not be made in America. At that time the Bausch & Lomb Optical Company, of Rochester, N. Y., placed on the market their first photographic lenses. They have just informed us that they have now made and sold fifty thousand lenses. This astonishing number does not include the tens of thousands of single view and other lenses used for similar work. It may be noted in this connection that Bausch & Lomb were not novices in lens making when they took up photographic lenses. They already enjoyed a reputation extending beyond national limits as makers of the highest grade of microscopical objectives. It is not to be wondered at that the same careful and accurate methods when applied to the production of other objectives, should prove equally successful.

Rapid Paper Making.—On April 17th an experiment was undertaken at the paper mill of Elsenenthal, near Grafenau, to determine the time taken to convert wood, at that time standing in the forest, into paper, at the same time producing a newspaper complete and ready for mailing. Notary Bott, in Grafenau, records the following appertaining to the matter :

"I proceeded, accompanied by two manufacturers, to the State

forest, situated near Frauenberg, close by the paper mill. There, at 7.35 in the morning, three trees were cut down and conveyed to the paper mill. Here the trees were cut into short pieces by a circular saw, deprived of their outer bark by another machine and split by a splitting machine. The wood was then sent to the planishing mill, where five machines were in readiness to receive it. After this had been done it was given to another machine, which, in conjunction with other material, prepared it for the paper machine proper. This process completed, the fluid matter contained in the aforementioned machine was put in an iron vat, and then the paper machine began to operate. At 9.34 I received the first perfect sheet of paper, completing the process from hewing the trees in the wood to the presentation of the first complete sheet in 1 hour and 59 minutes.

"With a few sheets of this paper I went by carriage to a printing establishment at Grafenau, which is situated about two miles from the paper mill at Elsenthal. At 10 o'clock I was in possession of the Grafenauer *Anzeiger*. It therefore took a period of two hours and twenty-five minutes to convert wood, which was in its natural condition at 7.35 in the morning, into a complete newspaper."

Photographers' Association of Michigan.—The Photographers' Association of Michigan offer the following prizes, which will interest artists outside of Michigan :

The most artistic novelty in photography, 1 Gold Medal.

To photographers outside of Michigan exhibiting one photograph 16-in. or over : First, 1 Gold Medal ; second, 1 Silver Medal.

For the most artistic design for a diploma, \$25 in cash.

The Photographers' Association of Michigan holds its second annual meeting in February, 1897, and we hope to make it the banner State convention.

For further information apply to J. E. Watson, Secretary, 148 Woodward Avenue, Detroit.

One Who Did.—"Who reads an American book?" He was alone.

"Who reads an American book?" he repeated. "I do."

And with a fine expression of self-scorn on his noble features the impecunious foreign lord who had come to America in search of an eligible heiress went on reading Bradstreet's.—*Chicago Tribune*.

It is divine nature that has given the country art that has built cities.—*Varro*.

Roentgen Ray Notes.

Inexpensive X Ray Apparatus.—The expense of special Crookes tubes, powerful induction coils and batteries has probably deterred many from entering this interesting field of experiment. In some recently devised apparatus an ordinary incandescent lamp is substituted for the Crookes tube, and an induction coil of common form is made to supply electricity of sufficiently high potential to produce the X ray phenomena. The lamp, which is a 52 volt, 16 candle power Sawyer-Man lamp, is made of German or lime glass. For convenience it is mounted on an insulating stand. The top of the lamp is covered with aluminum foil, which is connected with one terminal of the secondary of the induction coil, and the bottom of the lamp is connected to the other terminal of the secondary. By means of the fluoroscope and this lamp, the shadow of the bones of the hand, etc., may be readily seen. It has been found by experiment that when a blue fog appears in the lamp the vacuum is too low for the best results. By placing the lamp in the house circuit for fifteen to thirty minutes the high vacuum is restored by the heat and will remain good for about fifteen minutes. The coil is capable of giving a three-inch spark, and the apparatus is also adapted to making radiographs.—*Scientific American*.

Pseudo-Roentgen Rays.—Mr. Osterberg's lecture in New York also treated of pseudo-Roentgen rays. Images were thrown on a screen showing that glass, which casts a heavy shadow to Roentgen rays, casts none whatever in a so-called Roentgen print taken by means of sunlight; furthermore, that when the plate-holder is closed with an aluminium slide no effect whatever is produced by sunlight, thus establishing the fact that hard rubber slides allow filtration of light; and, finally, that if the plate-holder is placed so that the rays of sunlight strike it at an acute angle, no shadow pictures are produced, this showing that reflection takes place, and thus proving the absence of Roentgen rays.

Different Rays.—T. E. Espin, M.A., F.R.A.S., of Tow Law, County Durham, writes that he finds that there are rays given off from a Crookes tube to which metals are transparent. Photographing pieces of zinc, tinfoil, and silver, with a screen of calcium tungstate before the plate, the rays are shown to have penetrated them as easily

as wood. With a screen of barium platino-cyanide the images appear, so that the rays that cause the fluorescence of these two chemicals are different.

X-Rays and Bacilli.—Chicago never believes in letting its light be hid under a bushel, or even a pint measure for that matter, and it is now allowing a flood of illumination to proceed in straight lines in all directions in regard to X-rays and disease. If the startling announcement that the mysterious rays have proved hostile to the bacilli of the six deadly plagues of modern days—tuberculosis (consumption), cholera, diphtheria, influenza, pneumonia, and typhoid—prove true, it will reflect great credit on the Chicago savants, but unfortunately the announcement, as to the successful tests, has a rather suspicious look, since the Roentgen rays are described as “magnetic,” and other terms are used by the experimenters which suggest charlatanism. What they claim they have accomplished may be proven to be fact, but the odds are against it, and it will require many more laboratory experiments before the scientific world will accept as final the Chicago statement that the laboratory cultures of bacilli were killed by X-rays, since experiments made elsewhere have directly negatived this supposed discovery. Moreover, the suggestion that X-rays might be hostile to bacilli was made by Edison early in the history of his experimentation, as he went on the principle that it was well to suggest everything and claim everything for the new rays, allowing the imagination the fullest scope, so that there might be few applications of the new energy which he had not anticipated somehow or other. This suggestion was obviously based on the effect of sunlight on disease, as the curative value of fresh air and plenty of sunlight has been a cardinal doctrine in modern preventive medicine. Southern California is now often written as a prescription instead of drugs and cod liver oil. Whatever may be the outcome of the experiments in Chicago and elsewhere, the public should receive the claims with due conservatism, since such things are not established in a day, and Chicago is not exactly a center about which the medical world revolves. If, however, careful experiments prove beyond all question that the X-rays do devitalize bacilli in addition to the surgical value of the rays, a much wider channel will open for the new remedy as a therapeutic agent, the most remarkable the world has known.

X-ray Advertising.—The advertiser, like the modern scientist, is always on the lookout for “some new thing.” The fickle “interest” of the public must be wooed by novelty—and that good Baron Roent-

gen's X-rays, and their capabilities, certainly possess. An American optician, Mr. C. F. Easton, of Wallace, Idaho, has not been backward to recognize the importance of this truism. He advertises in a local sheet, wherein half a (advertisement) column is edited by himself, as follows: "After a new discovery in photography by Professor Roentgen, the editor of this half column became interested in the cathode ray and ordered a Crookes tube and other apparatus to produce the home-made radiation. He has laid awake nights theorising, with but poor success, while more fortunate inventors have been actually experimenting with the new light. Edison seems to be the only one who has succeeded in eclipsing Roentgen. The editor now claims third place in virtue of the invention of a little funnel-shaped metal tube which he calls a 'cathoscope.' By means of this tube and the direct light of the X-ray it is possible to tell in advance whether boiled hen-fruit is in reality boiled egg or boiled chicken. The editor considers that he has done humanity a great service by making known his invention to the world. He is still further desirous of serving the local community by offering an endless assortment of articles for gifts. A store full of choice things. Be sure to see our windows." Perhaps some apology is needed for quoting this effusion. But, if so, our excuse is furnished by the useful hint which it may afford.

Deflection of the Rays.—Nikola Tesla has continued his experiments on reflection of X-rays from different materials, using an angle of incidence of forty-five degrees as the most crucial test. Each sample was tried simultaneously as to its power of reflecting and transmitting the incident ray. Zinc, mica, tin, and lead were the best reflectors. Aluminium reflected no appreciable portion of incident rays. There was no corresponding order in transparency to the rays. Zinc, tin, and lead proved opaque; mica transparent. He upholds as his view that the X-rays are both cathodic and anodic. He has obtained good results by using a zinc reflector for his tubes. He announces that he has not found the least evidence of refraction.

Mr. Edison's Sound Wave Theory Unattacked.—The theory brought forward by Mr. Edison to account for the Roentgen ray phenomena; namely, that it is a high-pitch sound wave, while not having met with general acceptance, has not been widely objected to. Mr. Edison is still searching for facts in further confirmation of his theory.

In the Twilight Hour.

HELP others what you can, but never give what you cannot afford simply because it is fashionable.

YOU cannot dream yourself into a character; you must hammer and forge yourself into one.—*J. A. Froude.*

WHEN a man takes the place of a "scarlet sinner" it will not take him long to get a "white as snow" salvation.—*Ram's Horn.*

THE vexation, restlessness and impatience which small trials cause arise wholly from our ignorance and want of self-control.—*De Rents.*

WE know not exactly how low the least degree of obedience is which will bring a man to heaven, but this we are quite sure of, that he who aims no higher will be sure to fall short even of that, and that he who goes farthest beyond it will be most blessed.—*John Keble.*

MORNING by morning think, for a few moments, of the chief employments of the day, any one thing of great moment than others, thine own especial trial, and by one short, strong act commend thyself in all to God, offer all thy thoughts, words and deeds to Him—to be governed, guarded, accepted by Him.—*E. B. Pusey.*

EVERY man has his own vocation. There is one direction in which all space is open to him. He has faculties silently inviting him thither to the endless exertion. He is like a ship in a river; he runs against obstructions on every side but one; on that side all obstruction is taken away, and he sweeps serenely over a deepening channel into an infinite sea.—*Ralph Waldo Emerson.*

USE your own brains rather than those of others.

LOVE's secret is to be always doing things for God, and not to mind because they are such very little ones.—*F. W. Faber.*

IF WE do not endeavor to do that which is right in every particular circumstance, though trifling, we shall be in great danger of letting the same negligence take place in matters more essential.—*Margaret Woods.*

WE ARE never without help. We have no right to say of any good work, it is too hard for me to do; or of any sorrow, it is too hard for me to bear; or of any sinful habit, it is too hard for me to overcome.—*Elizabeth Charles.*

SUFFICIENT unto the day is the good thereof, equally is the evil. We must do at once, and with our might, the merciful deed that our hand findeth to do,—else it will never be done, for the hand will find other tasks and the arrears fall through.—*J. H. Thorn.*

GOD takes a thousand times more pains with us than the artist does with his picture, by many touches of sorrow and by many colors of circumstance, to bring man into the form which is the highest and noblest in His sight, if only we receive His gifts and myrrh in the right spirit.—*J. Tauler.*

LIVE a thoroughly pure life in everything. Remember that the proofs of a true faith are a clean body, a clean imagination, a clean memory, a clean heart, clean lips, a faith that rests in Christ's righteousness, and a life full of righteous deeds.—*J. H. Vincent.*